was seen to rise, and the reflection of subterraneous fire could be seen from Acireale.

Vesuvius.—With the exception of a small eruption on July 18, 1874, this mountain had only given off clouds of smoke, and had come to complete inactivity by the end of that year. From January 3 to 6, 1875, slight earthquakes and subterraneous noises were remarked, but they remained without further consequences. Only in December the inclination to activity seemed to return. In the interior of the large crater of the last eruption considerable changes took place, a great portion, towards the south-east, fell in, and thick clouds of black smoke rose at this spot. On the 20th the glow of fire was seen in the crater, and all other phenomena increased in intensity, however, without it coming to an eruption by the close of the year.

Iceland.—The eruptions which occurred in this country during 1875 are the most important ones of all. They were numerous and followed each other in quick succession, some of them with extreme intensity. The first one was a side-eruption of the Vatna, which began with vehement earthquakes on January 2. A broad stream of red-hot lava broke forth on the following day and continued to flow until the third week of February. About this time a second eruption began in another locality. This was preceded by a copious fall of ashes spreading over Kelduverfet. The crater of this second eruption lies within one of the largest prehistoric lava-fields, called Odarhaun. A third eruption took place on March 10 to the north of the latter; no less than sixteen small craters ejected masses of red-hot slakes, and more to the west a broad stream of incandescent lava flowed for several days to a distance of 600 yards. The fourth eruption was perceived on the whole of the island. It occurred on March 29 on the Vatna, and was accompanied by loud reports and subterraneous noise. The most remarkable phenomenon in this eruption was an enormous fall of ashes, which was so dense in Oesterland that the sun was darkened and lights had to be lit. The ferry on the Yökul river could not penetrate for several days the enormous masses of floating pumice-stone. The fall lasted five hours in the Yökul Valley, three in the Fljotr Valley, and two at Seydisfjörd. A strong west wind carried particles of these ashes to enormous distances, *i.e.*, to Norway and Sweden. (We have repeatedly reported on the ashes found in those countries at that time, and upon their origin.) Another prolonged eruption took place on April 4. The active crater this time lay to the south of Burfell, and the phenomenon was accompanied by violent explosions and the ejection of high garbs of incandescent slakes. It lasted about twelve days. The next eruption happened between April 20 and 24 in the so-called Oster Mountains. Matter was ejected to an enormous height and streams of lava overflowed the environs to a distance of fifteen miles at a breadth of from 800 to 2,000 metres. Towards the end of June another new crater formed and several lava streams broke forth near Thingö, between Vivatn and the Yökulsan. The last eruption, another very violent one, occurred on August 15 at the same place as the last. Twenty different columns of smoke were ejected, and on the next day slakes and red-hot lava followed.

Kloët.—This volcano, one of the less-known mountains of Java, had a great eruption early in 1875, according to news dated February 3. An enormous stream of lava completely destroyed the settlement of Blikar, besides causing great damage in other localities.

Ceboruco.—This Mexican mountain (situated at lat. 21° 25′ N.), which rises to a height of 480 metres (1,525 metres above sea-level) was believed extinct since the discovery of America, its first historical eruption taking place in 1870. Another great eruption followed on February 11, 1875, together with violent earthquakes, which particularly damaged St. Cristobal and Guadalaxara. On the evening of February 10 a fall of ashes occurred, and a high garb of fire rose in the night.

Mauna Loa.—A crater on the summit of the Mauna Loa, called Mukunweoweo, had an eruption of lava on August 11, 1875, but more detailed accounts have not reached Dr. Fuchs. This is the same crater which sometimes causes the whole island of Hawaii to be covered with the so-called "hair of the Goddess Pele," a fine thread-like obsidian, resembling fine threads of cotton.

Tongariro.—This volcano, situated in New Zealand, was active in the second half of 1875, and from time to time ejected lava and slakes. At intervals great geyser eruptions occurred, and at one time more than fifty jets of hot water, surrounded by vast columns of steam, were counted.

Santorin.—Since the last eruption the fumaroles on the island of Santorin were extremely active. On October 10, 1875, M. Fouqué observed numerous openings ejecting gases, not differing much from air in a chemical sense. During the night they showed the reflection of fire, and the stones surrounding the openings were red-hot. A second group of fumaroles yielded sulphurous, carbonic, and hydrochloric acids, their temperature varying from 110° to 310° C. Yet another group ejected sulphuretted hydrogen, carbonic acid, and water-vapour, at a temperature of 90°-99° C.

Speaking of earthquakes, Dr. Fuchs gives a complete list of all the earthquakes and terrestrial shocks which were felt in different parts of the globe during 1875, and they amounted to no less than ninety-seven in number, occurring on 100 different days. We regret that our space does not permit us to enumerate them, but compels us to confine ourselves to an account of the distribution of their number over the different months. Thus we have in January, 15; February, 7; March, 12; April, 7; May, 9; June, 10; July, 6; August, 5; September, 3; October, 2; November, 9; December, 12. Of fifty-two of which exact details could be obtained, thirty-six occurred in the night. On ten days earthquakes occurred simultaneously in different localities, and fourteen distinct places were repeatedly visited by them during the year. The most lamentable of all—real catastrophes—were those of Cucuta, on May 16–18, destroying several towns and numerous villages, and of St. Cristobal and Guadalaxara (February 11), which reached from the Pacific Ocean to Leon. Very severe were the earthquakes of the Lifu Island (March 28), of Uschak (May 3–5 and 12), of Lahore (December 12), and of Porto Rico (December 21). Altogether Dr. Fuchs estimates the number of lives lost in these earthquakes at 20,000, not to speak of the great damage to property. In conclusion the author gives an account of those earthquakes which were in evident connection with the eruptions of neighbouring volcanoes; and also mentions a few whose causes were undoubtedly not volcanic but mechanical phenomena. In a short appendix Dr. Fuchs gives some details of an eruption which occurred between September 7, 1873, and January 22, 1874, on the Island of Vulcano (one of the Lipari Isles), in continuation of his Report for 1874.

BIOLOGICAL NOTES

BROCA'S STEREOGRAPH.—A very ingenious instrument for taking mathematically accurate drawings of human crania and other objects of natural history, known as Broca's stereograph, has been lately presented to the College of Surgeons by the President, Mr. Prescott Hewett, which will prove a useful adjunct to the systematic study of the important anthropological collection now contained in the museum. It was exhibited and its use demonstrated by Prof. Flower at his concluding lecture on the Comparative Anatomy of Man. Among recent additions to this department of the collection are the valuable series of skulls of natives of New Guinea, collected by Dr. Comrie, Staff-Surgeon R.N. of H.M.S. *Basilisk*, described in the last number of the *Journal* of the Anthropological Institute; also four of natives of the Navigation or Samoan Islands, presented by Dr. Pye Smith. On several occasions during the course, Prof. Flower pointed out the necessity of far larger series of human skeletons and skulls than are at present contained in our museums, before our knowledge of physical anthropology can be placed on a satisfactory basis, as the individual variations are so great that it is only when a considerable series of any race are brought together that their true characteristics can be determined.

TENDRILS OF CLIMBING PLANTS.—M. Casimir de Candolle publishes some interesting observations on the tendrils of climbing plants in the *Archives des Sciences Physiques et Naturelles* (January). The experiments the author made were suggested to him by reading Mr. Darwin's work on the movements and habits of these plants. With regard to the manner in which the curves of the tendrils which are fixed at both ends are formed, M. de Candolle arrives at the following conclusions:—When a tendril of *Bryonia*, isolated or not, is fixed at both its ends, its upper part soon assumes the shape of a sinuous curve with double curvature, just like that of free tendrils. But this curve

is composed of two segments which are curved in opposite directions. The curvatures increase gradually in both segments, and little by little transform themselves into two screws, of which the upper one is turned from left to right. The primitive sinuous curve very often spreads over nearly the whole of the tendril, and in this case only two screws are produced, wound, of course, in opposite directions. In all cases, with very few exceptions, the number of screws thus produced in the tendrils is an even one, and M. de Candolle demonstrates that the cause of this phenomenon is a simple mechanical law.

EYELESS CRUSTACEANS.—A valuable paper on the eyeless, cave, and deep-water crustaceans, by M. Aloïs Humbert, is published in the same periodical. It is principally a minute description of *Niphargus puteanus*, which M. Humbert believes to be an ancient genus, descended from a form which is now extinct, thus corresponding entirely with *Proteus*, *Leptoderus*, *Anophthalmus*, and others. With regard to the question whether the *Niphargus* found in the Swiss lakes are merely colonies from the other animals of the same genus, which inhabit subterraneous waters, or whether the reverse is the case, the author expresses himself as follows:—If we suppose that the genus *Niphargus* appeared before the ice period, it is impossible to say anything with regard to its place of origin. But, if we do not suppose it to date so far back, and only look at the present fauna, I incline to the belief that the *Niphargus* of our Swiss lakes originate from those inhabiting subterraneous waters. When they reached the lakes they acclimatised themselves at depths where they found the darkness sufficiently intense, and in such a zone, all but completely dark, where they found the necessary conditions for their existence. In a more illuminated zone they could not have escaped from their enemies so easily and could not sustain the competition with their fellow-inhabitants, which possessed better visual organs. If we consider the greater dimensions attained by the forms inhabiting caves, it seems that the lake species, although living in vaster bodies of water, yet find themselves in conditions which are less favourable to their development and are suffering, as it were, from atrophy.

ORIGIN OF THE FLYING-POWER OF BEES.—The following interesting experiments made with bees, by Herr Dönhoff, are recorded in the *Archiv für Anatomie und Physiologie*. He took some bees from the hive, just as they came out of the entrance hole, and placed them under a glass bell at a temperature of 19° C. (66° F.). First they ran hastily up and down the sides of the glass and flew about in the jar. Later on their movements became less hasty, and after forty-five minutes they all sat quietly together, moved slowly and clumsily. They were no longer able to fly about. He let a few crawl upon a pencil, and by giving it a jerk threw them into the air; they fell down perpendicularly without giving a humming sound, *i.e.*, without moving their wings. He killed and opened one or two and found their honey-bags empty. To the others he then gave a solution of sugar, and after they had fed for about 3½ or 4 minutes he again threw some into the air. They no longer fell down perpendicularly but a little further off, and also moved their wings. A minute afterwards they did not fall down at all but flew to the window; they had become the same lively insects as before. If the temperature is under 19° C. they lose the power of flying even sooner, and a longer period elapses before it returns after they are fed on sugar-water. In higher temperatures the power returns sooner. Herr Dönhoff thinks it probable "that the bee loses the power of flying because it does not possess the necessary strength to be converted into muscular action, and that this strength returns to its system because in sugar it finds the necessary vital support."

THE BIRDS OF CELEBES.—In the March session of the German Ornithological Society Dr. Reichenow gave a detailed account of the birds of the Island of Celebes. Although this island is classed geographically with Borneo, Java, and Sumatra in the Sunda group, yet its fauna is almost entirely distinct from that of the other islands mentioned, approaching very closely to the Australian fauna. Late investigations show that this is peculiarly true of the ornithology of Celebes, and that in the geographical distribution of animals, the island must be classed with Australia, New Guinea, &c., and not with the other members of the Sunda group. The speaker exhibited six new varieties of Australian Colibris lately found in Celebes.

ITALIAN PLIOCENE EQUIDÆ.—Dr. Forsyth Major (Florence) will shortly publish a work embodying the results of his long and diligent researches on the Italian Pliocene Equidæ which will form a very valuable contribution to the evolutional history of the *Horse*. The publication of the book—illustrated with numerous finely executed plates—is being prepared by the Swiss Palæontological Society, under the supervision of Prof. Rütimeyer. A short *résumé* of some parts of the work appeared some time since in the *Rivista Scientifico-Industriale*.

DEVELOPMENT OF MOLLUSCA.—Dr. Packard, of Salem, Mass., writes with reference to Prof. Lankester's review of his work entitled "Life Histories of Animals, including Man" (NATURE, vol. xv., p. 271), to the effect that on p. 112 of the work in question, and also on p. 110, Prof. Lankester's name is cited by him as the authority for the use of the word "trochosphere." The paper in which Prof. Lankester proposes the term "veliger" is quoted on p. 113. This he considers sufficient reply to the reviewer's statement that he (Dr. Packard) does not ascribe, either the terms "veliger" or "trochosphere," or the views connected with them, of which he makes use, to their author.

PARTHENOGENESIS IN A PHANEROGAM.—Prof. Kerner, of Innsbrück reprints from the "Sitzb. der k. Akad. der Wissensch. zu Wien" an account of a remarkable instance of parthenogenesis in a flowering plant. The instance is a small Alpine Composite, *Antennaria alpina*, a native of the high Alps and Arctic region. Like some other allied species it is dicœcious, and the male plants are extremely scarce. Prof. Kerner has never seen the male plant, and in 1874 cultivated the female plant with very great care in the botanic garden at Innsbrück, excluding apparently all possibility of foreign impregnation either by this or any allied species. The plants produced, notwithstanding, a number of seeds, which were sown the following spring. Six of these seedlings germinated, but four out of these shortly perished. The two remaining ones reached maturity, growing as luxuriantly as the mother plant, and showing no signs of hybridisation. It is not stated, however, whether they also flowered and produced seed. From the extreme scarcity of the male plant, Kerner believes that the seeds are ordinarily matured without impregnation.

RESPIRATION OF ROOTS.—From recent experiments on the respiration of roots (the plants employed being ivy and veronica) MM. Deherain and Vesque conclude (1) That oxygen is necessary for all organs of plants, and that for the life of a plant it is not sufficient that its air-parts be in air; the roots must also find oxygen in the atmosphere of the ground in which they grow; (2) That the absorption of oxygen which takes place through the roots is accompanied with only a slight development of carbonic acid, so that the roots produce a partial vacuum in vessels in which they are contained; (3) That this development of carbonic acid takes place just as well in an atmosphere without oxygen as in one which contains it; whence may be inferred that the excreted carbonic acid does not come from superficial oxidation of some self-decomposing organs, but from a regular circulation of gases in the plant.